



The Global Ocean Observing System
www.goosocean.org



Global Ocean Observing System support for an Integrated Marine Debris Observing System (IMDOS)

Artur Palacz on behalf of GOOS

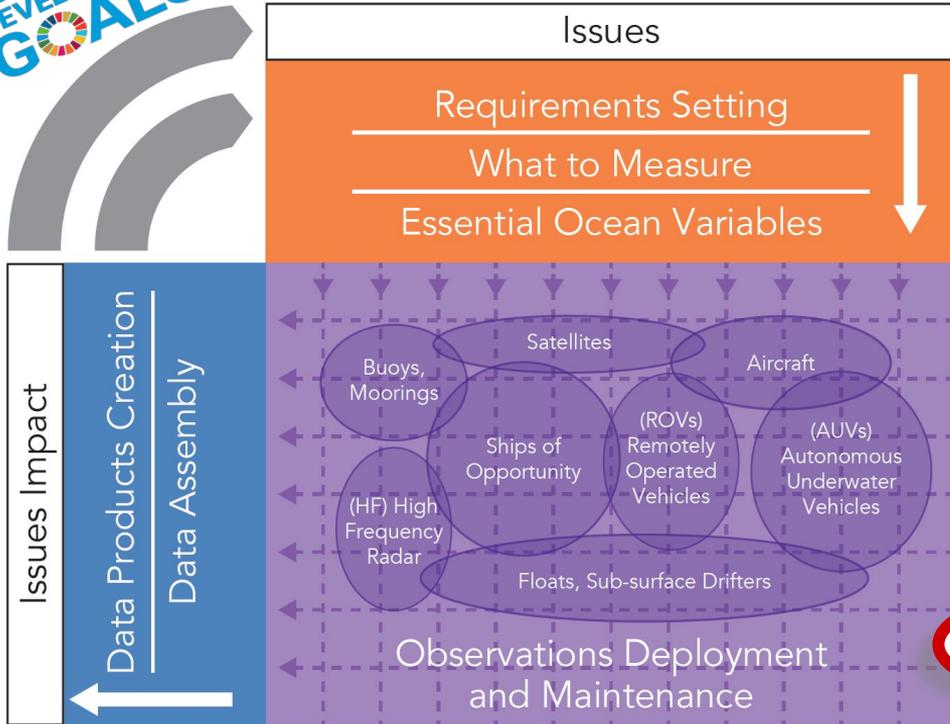
*One Integrated Marine Debris Observing System for A Clean Ocean
Satellite Activity of Ocean Decade Laboratory: Clean Ocean
19 November 2021*



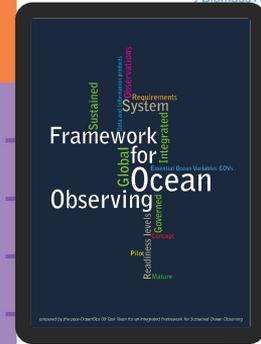
coordinates a large network of ocean observing platforms delivering data for climate, operational services and ocean health applications



Framework for Ocean Observing Process Diagram



NEW Human Pressure Variables: Marine (Plastic) Debris



Integrated Marine Debris Observing System (IMDOS) calls for:

- Integration of **remote sensing and in situ observations** to provide spatially coherent coverage and consistent surveying time series at local to global scale
- Use of **models to continuously optimize the design of the monitoring system**
- **Interaction with other observing systems** monitoring physical, chemical and biological processes in the ocean and on shorelines
- Engagement of **volunteer and citizen science initiatives**
- Establishing **best practices and harmonized methodologies** for the different elements of the observing system
- Enabling **synthesized data** to support innovative research and serve a diverse community of users

Also calls for *identification of relevant Essential Ocean Variable(s)*.

Maximenko et al. (2019). Front. Mar. Sci., 28 August 2019 |
<https://doi.org/10.3389/fmars.2019.00447>



EU H2020 EuroSea Project - task on: Developing capacity and coordination for sustained global ocean observations of marine plastics



GOOS Action Plan to support IMDOS which includes:

- Augmenting and harmonizing existing sampling protocols with relevant marine debris survey protocols (e.g. vessels servicing moorings, ships of opportunity)
- Promoting a coordinated network for surface floating plastics (incl. citizen science capacity), integrated within GOOS structures
- Matching in situ capacity with satellite product development needs
- Supporting the GPML Digital Platform
- Establishing global coordination of IMDOS in partnership with experts and leading authorities focused on marine debris monitoring, data management and assessments



Marine Litter WG



Conveners: *Artur Palacz, René Garello, Ngozi Oguguah, Florence Peter*
and leads of 7 thematic sessions:

Sanae Chiba, Jillian Campbell, Heidi Savelli-Soderberg, Francois Galgani, Alexander Turra, Yannick Lerat, Anne Bowser, Shungu Garaba, Paolo Corradi, Christophe Maes, Audrey Hasson, Thierry Huck, Hans-Peter Plag, Dan Martin.

Best practices for global plastics monitoring

Towards standard sampling protocols

Led by Galgani (Ifremer) & Turra (Uni São Paulo)

Marine Litter Working Group
IV Annual Ocean Best Practices System
(OBPS) Workshop, September 2020

Consider scientific, methodological, environmental, technical and ethical constraints when recommending and adopting common methodologies for marine litter monitoring and assessments.



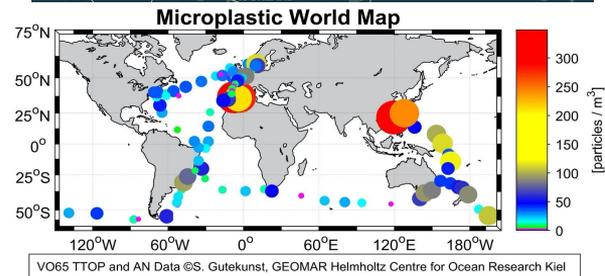
Selected recommendations:

- Elaborate formal guidelines for global-scale marine litter indicators
 - Consider technical workshops to harmonize monitoring approaches/protocols and define optimal approaches to manage the data
- beach litter
- **microplastics (floating and/or sediment)**
- **seafloor litter**
- litter ingested by biota (e.g. mussels and or sea turtles)



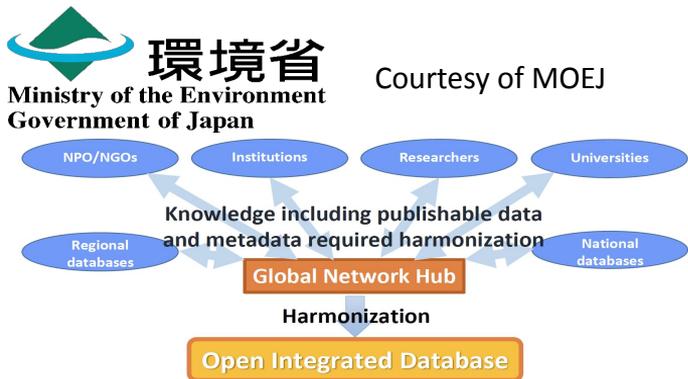
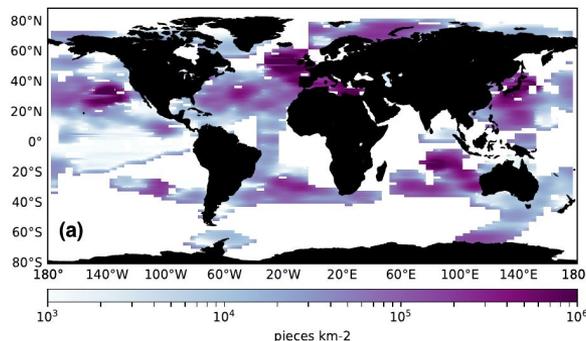
Towards a coordinated network for surface floating plastics

- Harmonization of microplastic sampling methods and interoperable data management solutions (tremendous efforts led by MOEJ)
- Expanding citizen science monitoring beyond beach litter through sailing community engagement
- Integration within the Ship Of Opportunity Programme



Tanhua et. al (2020)

Isobe et. (2021)



6:10 PM · Jan 30, 2021 · Hootsuite Inc.

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Coupling coastal biodiversity and seafloor litter monitoring efforts in Europe and beyond

ONLINE WORKSHOP

Towards a Coordinated European Observing System for Marine Macroalgae

TOPICS

Observation strategies and data sharing practices
Integration and sustainability
Best practices and standard operating procedures

23rd-25th
November 2021
10-12am, 2-4pm CET

WORKSHOP CO-CHAIRS:

Isabel Sousa-Pinto
(CIIMAR, University of Porto)
Lisandro Benedetti-Cecchi
(Department of Biology,
University of Pisa)



Addresses gaps and follows recommendations from:

Sessions on macroalgal and litter monitoring integration:

- **Harmonized standard operating protocols and shared survey design** for visual monitoring methods (e.g. diving)
- **Streamlined data flows and products** (EMODnet) to support multiple MSFD requirements
- **Setting common requirements for remote sensing** product development (e.g. ESA projects)



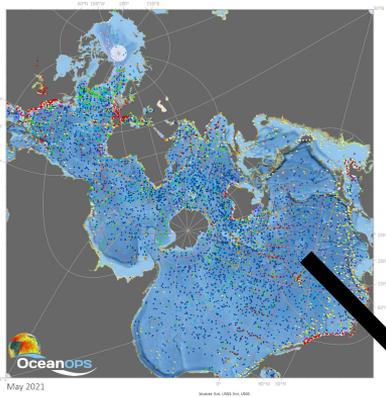
JRC SCIENTIFIC AND POLICY REPORTS

Guidance on Monitoring of
Marine Litter in European Seas

“Considering opportunities to couple monitoring efforts may be the best approach to monitor litter on the sea-floor. (...) [e.g.] with programmes on biodiversity.” (p.64)

*A guidance document within
the Common Implementation
Strategy for the Marine
Strategy Framework Directive*

IMDOS: backbone structure behind the GPML Digital Platform?



Welcome to the Global Partnership on Marine Litter Digital Platform!

The Digital Platform is an open-source, multi-stakeholder platform that compiles different resources, connects stakeholders and integrates data to guide action. The resources have been collected through research based on publicly available information, interviews with experts, and inputs received through submissions. They cover all stages in the plastics life cycle, with respect to prevention of litter and waste, design and production, use and consumption, waste management and marine litter monitoring and capturing. Explore the map below by clicking on a country, or filter by resource. You can learn more about each resource's source [here](#).

Countries

Summary

- Initiative 378 in 189 countries
- Action Plan 46 in 58 countries
- Policy 274 in 119 countries
- Technical Resource 148 in 63 countries
- Financing Resource 77 in 159 countries
- Event 54 in 188 countries
- Technology 75 in 39 countries
- Entity 344 in 158 countries
- Individual 58 in 46 countries

The boundaries and names shown, and the designations used on this map do not imply official endorsement or acceptance by the United Nations.

A world map where countries are shaded in various shades of green, representing the distribution of resources. A legend at the bottom indicates the number of resources per country: 0, 1-12, 12-24, 24-37, 37-49, and >49.

<https://digital.gpmarinelitter.org>

“There is a need to develop a long-term observation platform, which is able to provide the necessary monitoring data for mitigating the impacts of marine litter on the ecosystem.

(...) [IMDOS] will offer unified access to a vast majority of marine debris data (...) which can deliver indicators and decision-support tools (...)”

E. Smail et al. (UNEP/GEO Blue Planet [White Paper draft](#))

Provide guidance and coordination for a global sustained observing system to strengthen the scientific knowledge on marine debris/litter pollution.